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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,018	06/07/2006	Shigeru Fujita	R2184.0505/P505	8964

24598 7590 04/29/2009

DICKSTEIN SHAPIRO LLP
1825 EYE STREET NW
Washington, DC 20006-5403

EXAMINER	
MALEKZADEH, SEYED MASOUD	

ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
04/29/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,018	FUJITA ET AL.	
	Examiner	Art Unit	
	SEYED M. MALEKZADEH	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-12* is/are pending in the application.

4a) Of the above claim(s) *10-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/17/2009 has been entered.

Response to Amendment

Claims **1 and 3- 12** are **pending**.

Claims **1 and 3- 9** are **rejected**.

Claims **10- 12** are **withdrawn**.

Claim **2** is **cancelled**.

Claim **1** is **amended**.

In view of the amendment, filed on 02/17/2009, following rejections/objections are **withdrawn** from the previous office action for the reason of record.

- Rejection of claims 1- 4 and 6- 8 under 35 U.S.C. 103(a) as being unpatentable over Murata et al. (US 6,484,618) in view of Kamitakahara (JP 05- 200757)

- Rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Murata et al. (US 6,484,618) in view of Kamitakahara (JP 05-200757) and further in view of Fujita (JP 2001-297488)
- Rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Murata et al. (US 6,484,618) in view of Kamitakahara (JP 05-200757) and further in view of Shibata (JP 2002-83450)

In view of the amendment, filed on 02/17/2009, following **new grounds of rejection** are applied.

New Grounds of Rejection

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims **1, 3- 9** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim **1** recites "the heat insulating portion being high in a region of the middle section" (see claim 1, lines 12) which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Does the

claim refer to "high" as a meaning for "maximum". Claim modification is suggested. Note: the claim modification requires complying with the specification.

Claim **1** recites "**gradually** lowering toward the lowermost section" (see line 14); which renders the claim indefinite because the claim language is not clear if the term "gradually" refers to decreasing the concentration of the heat insulating material in a continuous manner or in a step by step manner. Clarification of the claim is suggested. Note: the claim modification requires complying with the specification.

In claim **8**, the recitations of "PTFE", "PFA", "ETFE", and "PVDF" render the claim of indefinite scope since trademarks are not permitted in the claims: see Ex parte Simpson, 218 USPQ 1020. Modification is requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

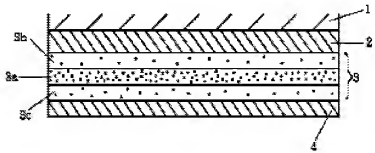
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3- 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Togawa (JP 06-272093) in view of Nishimoto et al. (US 4,784,893)

Togawa (JP '093) teaches a metallic heat insulating structure having excellent heat insulating function including a metallic base body (1) comprising copper alloys, nickel alloys, iron alloys, a metal plating film (2) as a lowermost section, formed one side of the metallic base substance (1), a metal plated film (4), as the upper most section formed of the same metal material of the coat (2), and a composite plated film (3) as a middle section including a lower heat conductivity and having a metal matrix in which a plurality of ceramic particles, as heat insulating portions, are distributed within a thickness of the middle section. (See paragraphs [0015] - [0017]) Therefore, the plurality of ceramic particles causes a plurality of minute voids within the metal material of the middle section. Further, Togawa (JP '093) discloses the ceramic particles comprise zirconia, yttria, seria, silica, alumina, a titania, mullite, silicon carbide, and etc. (See paragraph [0019]) Therefore, the prior art teaches that the heat resisting resin substance includes at least one of a heat resisting

inorganic material including particles of zirconia series, alumina series, and silicon carbide series.

【図１】



Further, Togawa (JP 06272093) discloses the metal plating film (2), as the lowermost section, comprises nickel, nickel alloys, copper, copper alloys, iron, and iron alloy plating, (See paragraph [0016]) and the metal plating (4), as the upper most section, is as the same metal material as the metal material of the plating film (2). (See paragraph [0031]).

Also, Togawa (JP 06272093) teaches the concentration of the ceramic particles as heat insulating portions in the middle layer (3) gradually increases from the inter-surface of the lower most section (2) with the middle section (3) towards the middle layer (3a) of the middle section (3) and again decreases from the middle layer (3a) towards the inter-surface of the lower most section (4) with the middle layer (3). (See abstract and paragraphs [0008] – [0009])

Moreover, Togawa (JP 06272093) teach the variance of the ceramic particles, as heat insulating materials, in the metal matrix excels thermal shock resistance, anti-corrosion, and chemical resistance of the insulating

middle section, and further the variance of the ceramic particles enhance insulating function without generating a blister, etc. Furthermore, a thermal break layer with a gradient concentration of ceramic particles, in which the concentration of the ceramic particles increases towards the center section of the thermal break provides an improved physical characteristics and heat insulating operation for the middle layer and prevents concentration of mechanical stresses and thermal stresses in the thermal break layer. (See paragraphs [0008] and [0012])

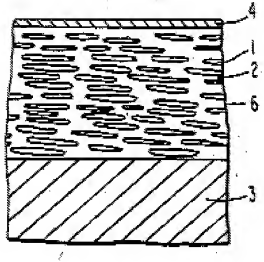
Togawa (JP '093) **fails** to teach the disclosed metallic heat insulating structure includes a pattern on the surface; however, it would have been obvious to change the surface shape of the upper most section (4) to provide a pattern on the surface of the insulating structure since a mere change in the shape of apparatus member without affecting the functioning of the apparatus part would have been within the level of ordinary skill in the art, *In re Dailey et al., 149 USPQ 47; Eskimo Pie Corp. v. Levous et al., 3 USPQ 23.*

However, Togawa (JP '093) **fails** to teach a concentration of the heat insulating particles in the middle layer is maximum below the upper most section and the heat insulating particles concentration gradually decreases toward the lowermost section, **as claimed in claim 1 and 5**.

In the analogous art, Nishimoto et al. (US 4,784,893) teach a heat conductive circuit board comprising a metal substrate (3) as an upper most section, an insulating layer (6) provided on at least one main surface of the

metal substrate as a middle section, in which the insulating layer is formed by impregnating an alumina fiber (1) as ceramic particles, with an organic polymer (2) and a micro-fibrillar organic fiber as a bonding agent, and an electrically conductive metal foil layer (4), as a lowermost section provided on the insulating layer (6). (See column 15, lines 11- 25 and figure 3)

FIG. 3



Further, Nishimoto et al. ('893) teach the insulating layer includes a concentration gradient of the heat conductive fine ceramic particles in which the concentration of said ceramic particles (1) in the organic polymer (2) is high in a portion of the insulating layer proximate to the metal substrate (3) and is low in a portion of the insulating layer proximate to the electrically conductive metal foil layer (4). (See column 15, lines 27- 34)

Moreover, Nishimoto et al. ('893) disclose by adjusting the concentration distribution of the ceramic particles in a thickness of an insulating layer, the

degradation of the bonding strength can be prevented such that much of the organic polymer exists in the portion of the insulating layer are in contact with the conductor. (See column 10, lines 58- 63)

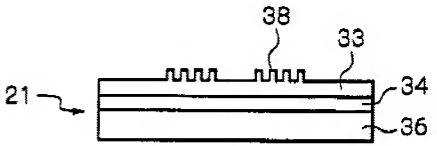
It would have been obvious for one of ordinary skill in the art at the time of applicant's invention to modify the heat insulating stamp as taught by combined teachings of Togawa (JP '093) through **providing** a higher concentration of the heat insulating particles in one side of the middle section below the upper most section and gradually lowering the concentration of heat insulating particles toward the lowermost section **in order to** improve the insulating quality of middle layer since such a concentration adjustment prevents the degradation of the bonding strength, as suggested by Nishimoto et al ('893)

Claims 1 and 3- 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al (US 6,468,618) in view of Togawa (JP 06-272093) and further in view of Nishimoto et al. (US 4,784,893)

Murata et al. ('618) teach a heat-insulated son stamper (21) as an apparatus for molding an optical disk base in which the apparatus comprises a thick nickel layer (33), as an uppermost section, having a transfer surface (38) as a pattern, a nickel layer (36) as a lowermost section, and a heat insulating layer (34) as a middle section having a heat conductivity lower than the upper most section (33). (See column 5, lines 38-67; column 6, lines 1-4 and column

6) Therefore, Murata et al. ('618) teaches the heat insulating stamp comprises an uppermost section made of a metal material, a lowermost section made of a metal material, and a middle section having a heat conductivity lower than the uppermost section, wherein the metal material of the lowermost section is same as the metal material of the uppermost section.

Fig. 6



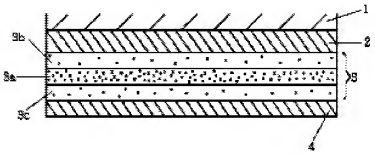
Murata et al. ('618) also teach the heat insulating layer is made of polyimide particles which is a heat resisting resin (See lines 47-59, column 4 and lines 40-43, column 8) and a heat resistant inorganic polymer. (See lines 59-67, column 8)

However, Murata et al. ('618) **fail** to teach a plurality of heat insulating portions are dispersed in a metal material to form a middle section and further the concentration of the heat insulating portion is maximum below the upper most section and further the concentration gradually decreases toward the lowermost section, **as claimed in claim 1**, and further **fail** to teach a plurality of voids are formed within the metallic matrix of the middle section, **as claimed**

in claim 4, and also heat resisting particles are including one of zirconia series, alumina series, silicon carbide series, or silicon nitride series, **as claimed in claim 9**.

In the analogous art, Togawa (JP '093) teaches a metallic heat insulating structure having excellent heat insulating function including a metallic base body (1) comprising copper alloys, nickel alloys, iron alloys, a metal plating film (2) as a lowermost section, formed one side of the metallic base substance (1), a metal plated film (4), as the upper most section formed of the same metal material of the coat (2), and a composite plated film (3) as a middle section including a lower heat conductivity and having a metal matrix in which a plurality of ceramic particles, as heat insulating portions, are distributed within a thickness of the middle section. (See paragraphs [0015] - [0017]) Therefore, the plurality of ceramic particles causes a plurality of minute voids within the metal material of the middle section. Further, Togawa (JP '093) discloses the ceramic particles comprise zirconia, yttria, seria, silica, alumina, a titania, mullite, silicon carbide, and etc. (See paragraph [0019]) Therefore, the prior art teaches that the heat resisting resin substance includes at least one of a heat resisting inorganic material including particles of zirconia series, alumina series, and silicon carbide series.

【図１】



Further, Togawa (JP 06272093) discloses the metal plating film (2), as the lowermost section, comprises nickel, nickel alloys, copper, copper alloys, iron, and iron alloy plating, (See paragraph [0016]) and the metal plating (4), as the upper most section, is as the same metal material as the metal material of the plating film (2). (See paragraph [0031]).

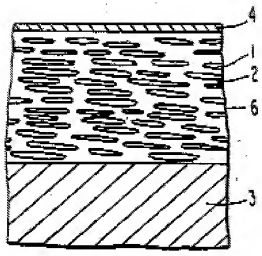
Also, Togawa (JP 06272093) teaches the concentration of the ceramic particles as heat insulating portions in the middle layer (3) gradually increases from the inter-surface of the lower most section (2) with the middle section (3) towards the middle layer (3a) of the middle section (3) and again decreases from the middle layer (3a) towards the inter-surface of the lower most section (4) with the middle layer (3). (See abstract and paragraphs [0008] – [0009])

Moreover, Togawa (JP 06272093) teach the variance of the ceramic particles, as heat insulating materials, in the metal matrix excels thermal shock resistance, anti-corrosion, and chemical resistance of the insulating middle section, and further the variance of the ceramic particles enhance insulating function without generating a blister, etc. Furthermore, a thermal

break layer with a gradient concentration of ceramic particles, in which the concentration of the ceramic particles increases towards the center section of the thermal break provides an improved physical characteristics and heat insulating operation for the middle layer and prevents concentration of mechanical stresses and thermal stresses in the thermal break layer. (See paragraphs [0008] and [0012])

In another analogous art, Nishimoto et al. (US 4,784,893) teach a heat conductive circuit board comprising a metal substrate (3) as an upper most section, an insulating layer (6) provided on at least one main surface of the metal substrate as a middle section, in which the insulating layer is formed by impregnating an alumina fiber (1) as ceramic particles, with an organic polymer (2) and a micro-fibrillar organic fiber as a bonding agent, and an electrically conductive metal foil layer (4), as a lowermost section provided on the insulating layer (6). (See column 15, lines 11- 25 and figure 3)

FIG. 3



Further, Nishimoto et al. ('893) teach the insulating layer includes a concentration gradient of the heat conductive fine ceramic particles in which the concentration of said ceramic particles (1) in the organic polymer (2) is high in a portion of the insulating layer proximate to the metal substrate (3) and is low in a portion of the insulating layer proximate to the electrically conductive metal foil layer (4). (See column 15, lines 27- 34)

Moreover, Nishimoto et al. ('893) disclose by adjusting the concentration distribution of the ceramic particles in a thickness of an insulating layer, the degradation of the bonding strength can be prevented such that much of the organic polymer exists in the portion of the insulating layer are in contact with the conductor. (See column 10, lines 58- 63)

It would have been obvious for one of ordinary skill in the art at the time of applicant's invention to modify the heat insulating stamp as taught by

Murata et al (US '618) through **providing** a heat insulating particles which are dispersed in a metal material forming the middle section **in order to** excel thermal shock resistance, anti-corrosion, and chemical resistance of the middle section, and further preventing concentration of mechanical stresses and thermal stresses in the middle section, and also **providing** heat resisting particles from a group of zirconia series, alumina series, or silicon carbide series **in order to** increase the strength of bonding between the insulation layer and the metal layer, as suggested by Togawa (JP 06272093).

Furthermore, **it would have been obvious** for one of ordinary skill in the art at the time of applicant's invention to modify the heat insulating stamp as taught by combined teachings of Murata et al (US '618) and Togawa (JP 06272093) through **providing** a higher concentration of the heat insulating particles in one side of the middle section below the upper most section and gradually lowering the concentration of heat insulating particles toward the lowermost section **in order to** improve the quality of middle insulating layer since such a concentration adjustment prevents the degradation of the bonding strength, as suggested by Nishimoto et al ('893)

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Masoud Malekzadeh whose telephone number is 571-272-6215. The examiner can normally be reached on Monday – Friday at 8:30 am – 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin, can be reached on (571) 272-1189. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance form a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SEYED M. MALEKZADEH/

Examiner, Art Unit 1791

/Steven P. Griffin/

Supervisory Patent Examiner, Art Unit 1791